

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,888,853 B1
APPLICATION NO. : 09/786742
DATED : May 3, 2005
INVENTOR(S) : Heinrich Jurgensen

Page 1 of 16

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The Title page should be deleted and substituted with the attached title page.

Title page,

Item [56], **References Cited**, substitute the following references:

-- U.S. PATENT DOCUMENTS

3,931,458 A *	1/1976	Dini.....	358/3.29
RE32,139 E *	5/1986	Taudt et al.....	358/524
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5,780,200 A *	7/1998	Kitaguchi et al.	430/270.1
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5,900,109 A *	5/1999	Sanders et al.	156/552
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6,283,022 B1 *	9/2001	Kamen et al.	101/129

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Page 2 of 16

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Title page (cont'd),

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Leistungsskalierung von Faserlasern; Fachbereich Physik der UNI Hannover; Dipl-Phys. Zellmer; 1996

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Optimization of micro channel heat sinks for high power diode laser in copper technology; SPIE Proceedings Vol 3097, 1997

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Page 3 of 16

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Title page (cont'd).

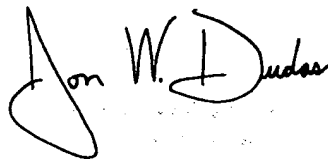
Drawings,

Replace Figures 1, 3, 5, 6, 11, 24, 25, 26, 28, 29, 31, and 34 with the attached Figures 1, 3, 5, 6, 11, 24, 25, 26, 28, 29, 31, and 34 as shown on the attached pages.

This certificate supersedes Certificate of Correction issued November 15, 2005.

Signed and Sealed this

Tenth Day of October, 2006

A handwritten signature in black ink, appearing to read "Jon W. Dudas", is written over a faint, circular official stamp.

JON W. DUDAS
Director of the United States Patent and Trademark Office



US00688853B1

(12) **United States Patent**
Jürgensen

(10) Patent No.: **US 6,888,853 B1**
(45) Date of Patent: **May 3, 2005**

(54) **LASER RADIATION SOURCE**

(75) Inventor: **Heinrich Jürgensen, Raisdorf (DE)**

(73) Assignee: **Hell Gravure Systems GmbH, Kiel (DE)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/786,742**

(22) PCT Filed: **Sep. 1, 1999**

(86) PCT No.: **PCT/DE99/02721**

§ 371 (c)(1),
(2), (4) Date: **Sep. 14, 2001**

(87) PCT Pub. No.: **WO00/13839**

PCT Pub. Date: **Mar. 16, 2000**

(30) **Foreign Application Priority Data**

Sep. 8, 1998 (DE) 198 40 926

(51) Int. Cl.⁷ **H01S 3/067; B41F 9/00; G03F 7/00; B41J 2/435**

(52) U.S. Cl. **372/6; 372/9; 372/24; 101/150; 101/153; 430/269; 430/300; 430/307; 347/224; 347/233; 347/238; 347/241**

(58) Field of Search **372/6, 9, 24, 26, 372/69; 101/150, 153; 430/269, 300, 307; 347/224, 233, 238, 241**

(56) **References Cited**

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3,931,458 A • 1/1976 Dini 358/3.29
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6,106,627 A • 8/2000 Vializis 118/724
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6,283,022 B1 • 9/2001 Kamen et al. 101/129

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Fiber Technology Ushers In New Laser Devices—Feature: Fiber Lasers May 1991 Laser Focus World—pp. 231–238.
1998 Semiconductor Laser Product Catalog—SDL Copy-right 1997 SDL, Inc. pp. 40–45.

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Primary Examiner—Don Wong

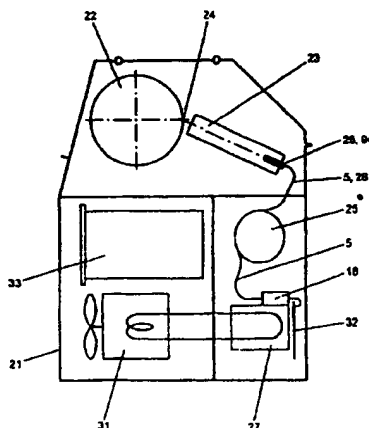
Assistant Examiner—James Menefee

(74) Attorney, Agent, or Firm—Schiff Hardin LLP

(57) **ABSTRACT**

A system and method for selectively process material on a processing surface of a printing form to create a fine structure or pattern for images or text. At least one fiber laser comprising a pump source and a laser fiber is provided. A laser gun is mounted adjacent the printing form and has at least a focusing optics. The fiber laser outputs a laser beam which is diffraction-limited to permit the focusing optics to focus the laser beam onto the processing surface of the printing form as a spot having a spot size sufficiently small to process the processing surface to create the fine structure or pattern images or text.

296 Claims, 39 Drawing Sheets



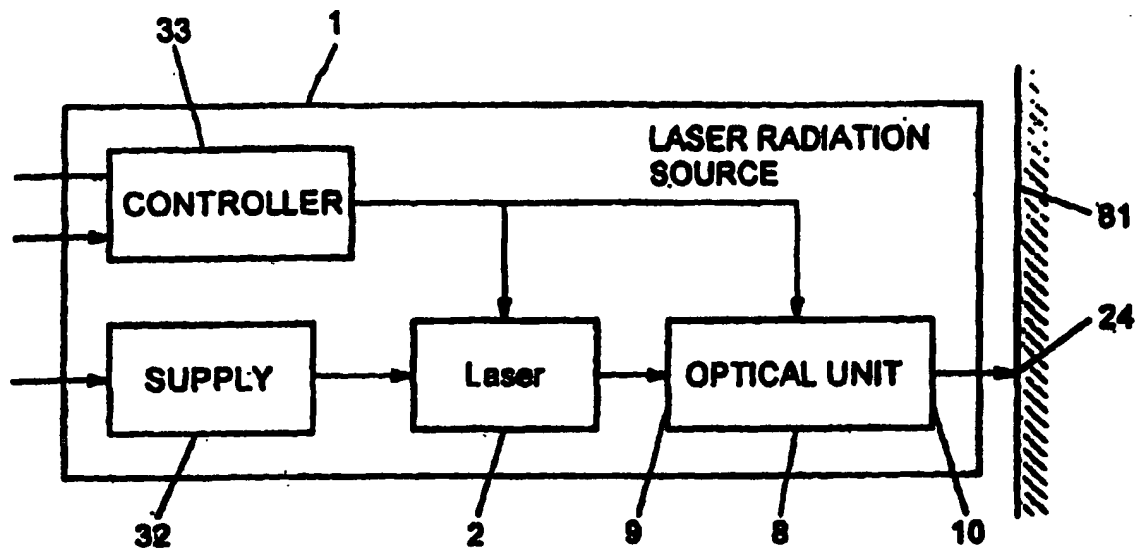
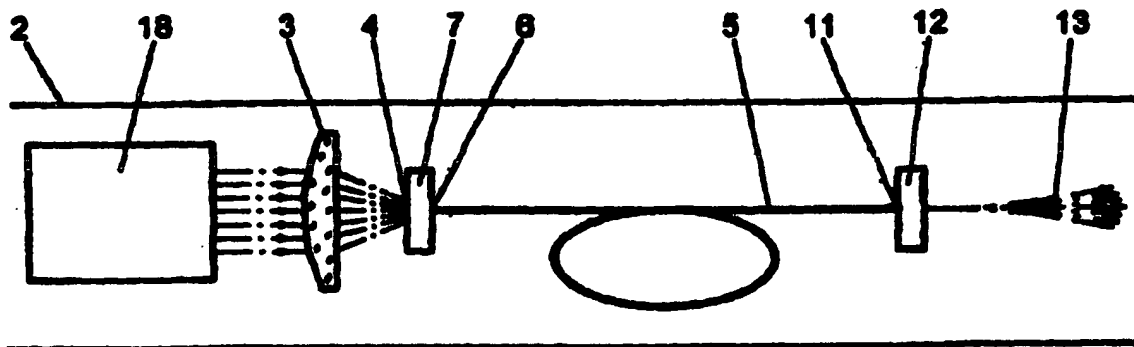
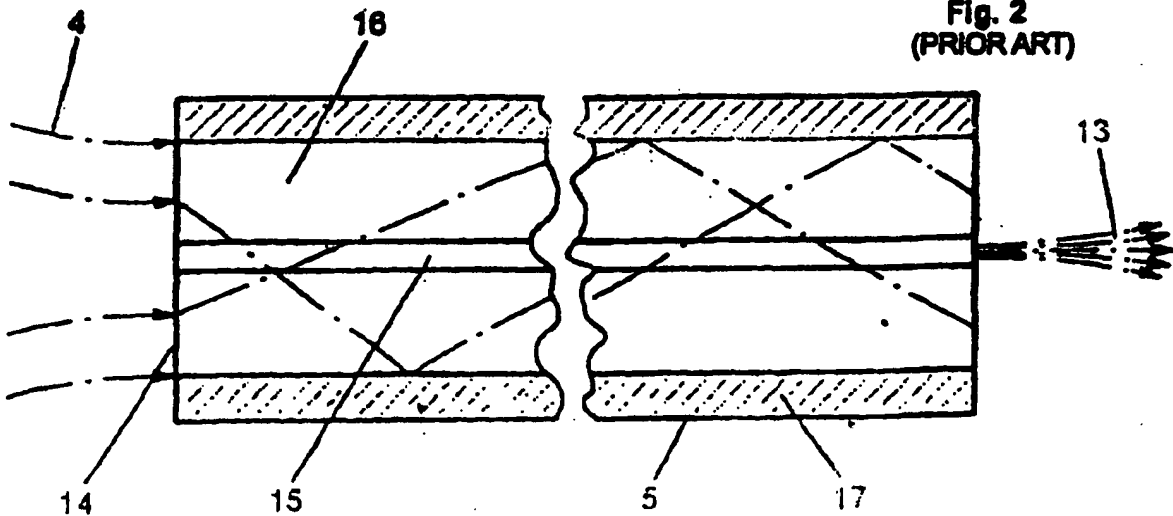


Fig. 1

Fig. 2
(PRIOR ART)Fig. 2a
(PRIOR ART)

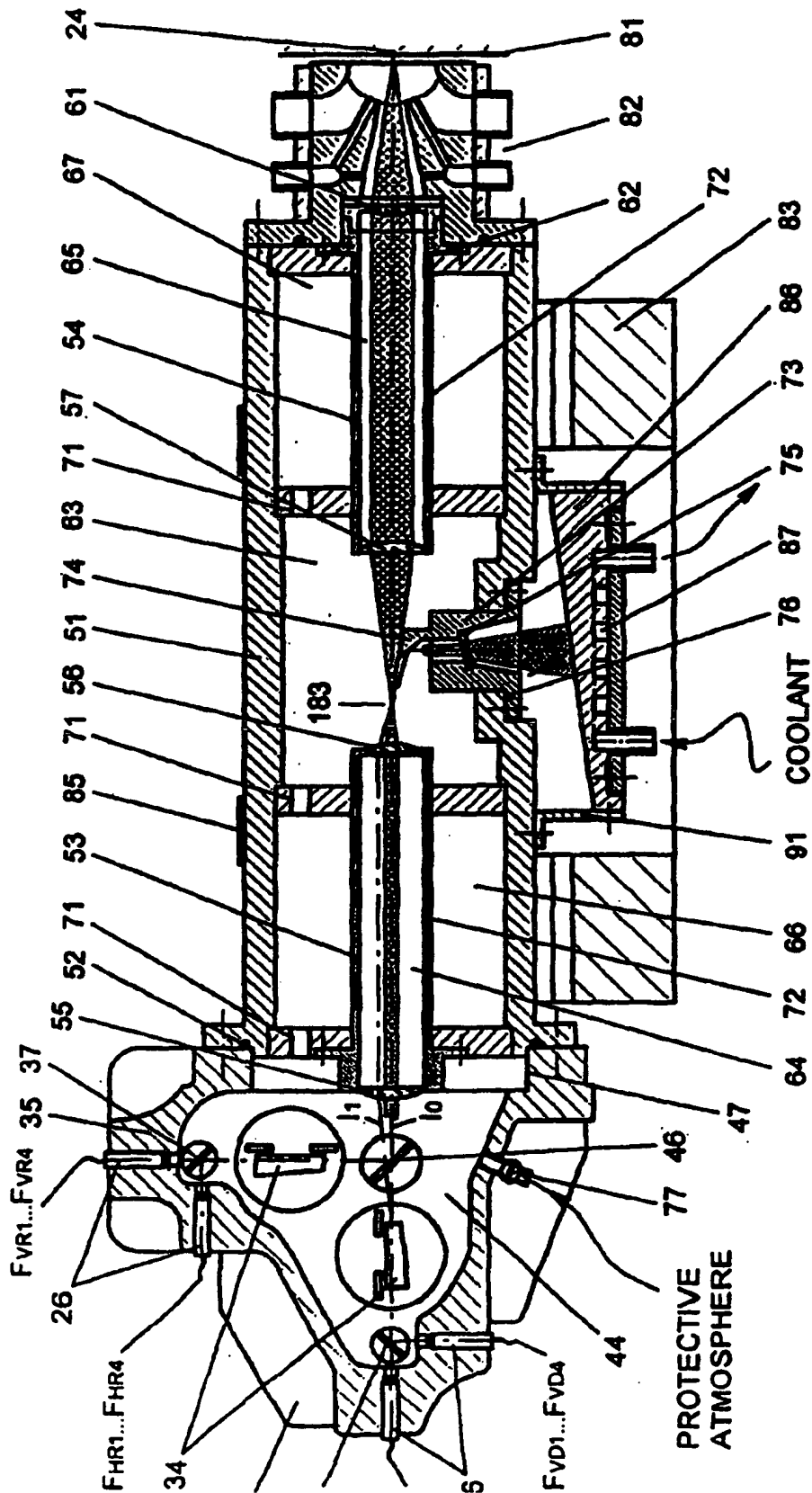


Fig. 4

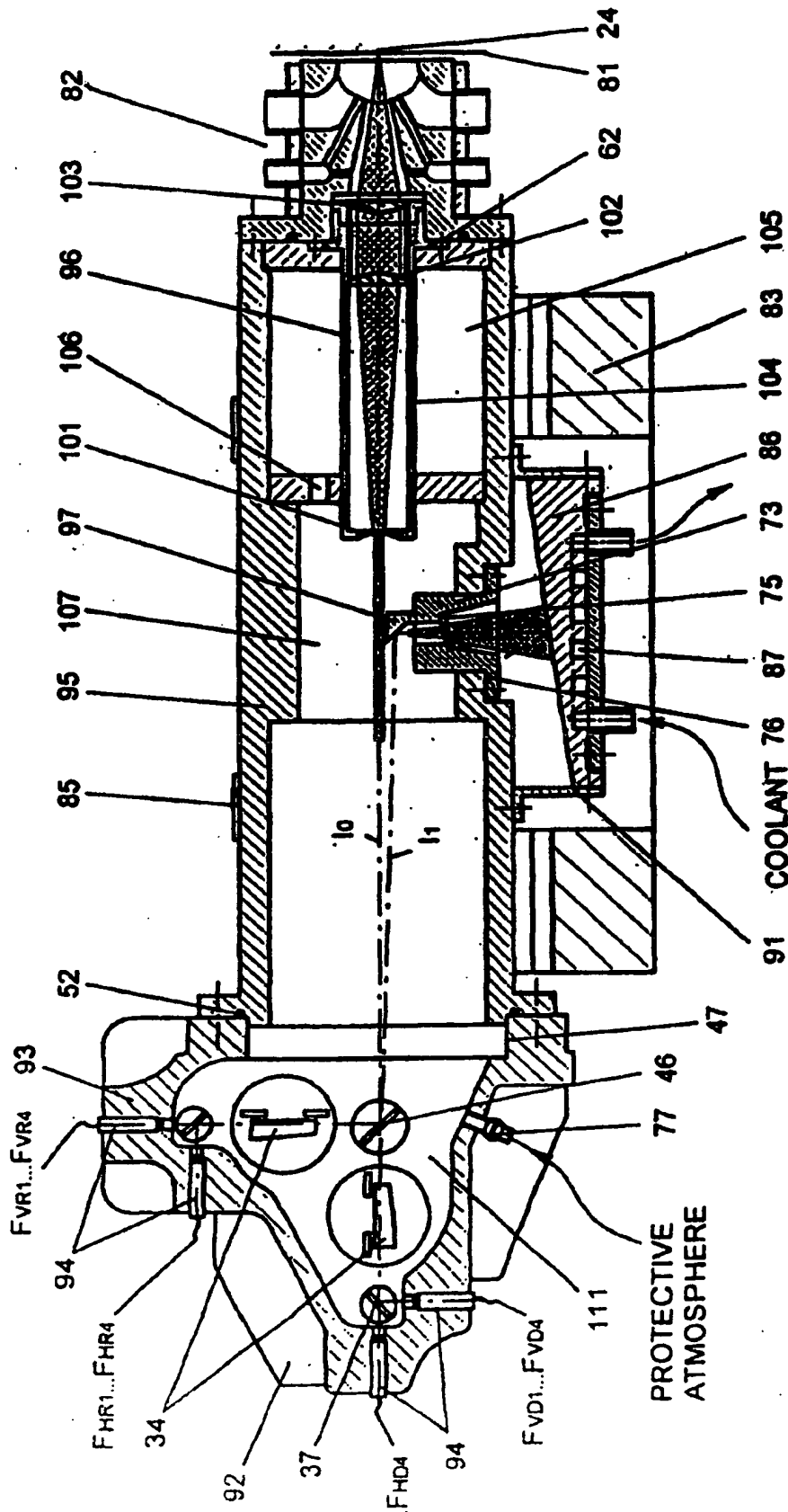


Fig. 4b



Fig. 4c

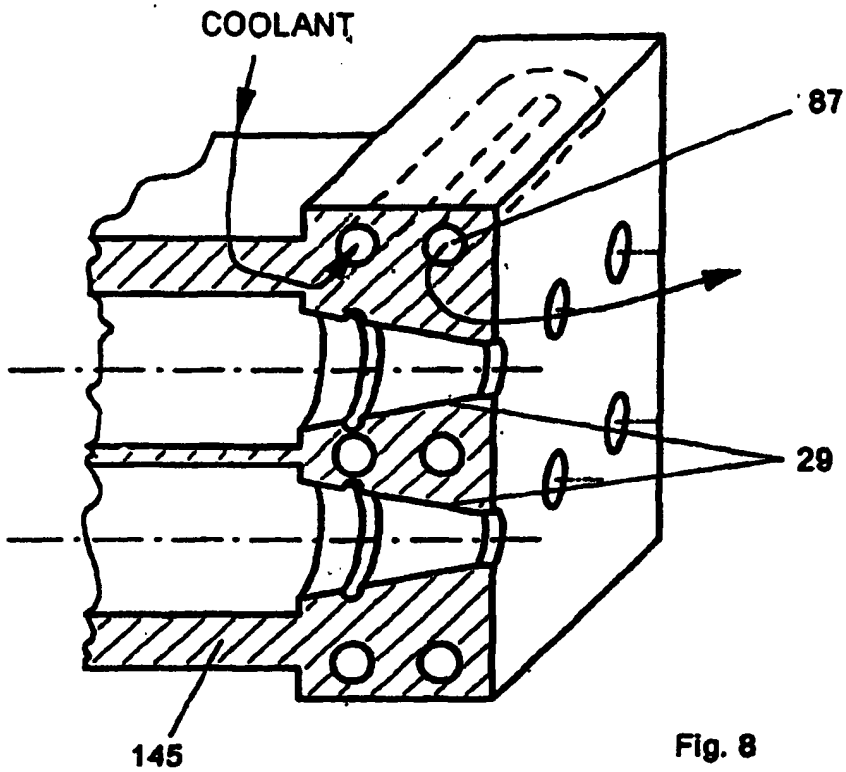


Fig. 8

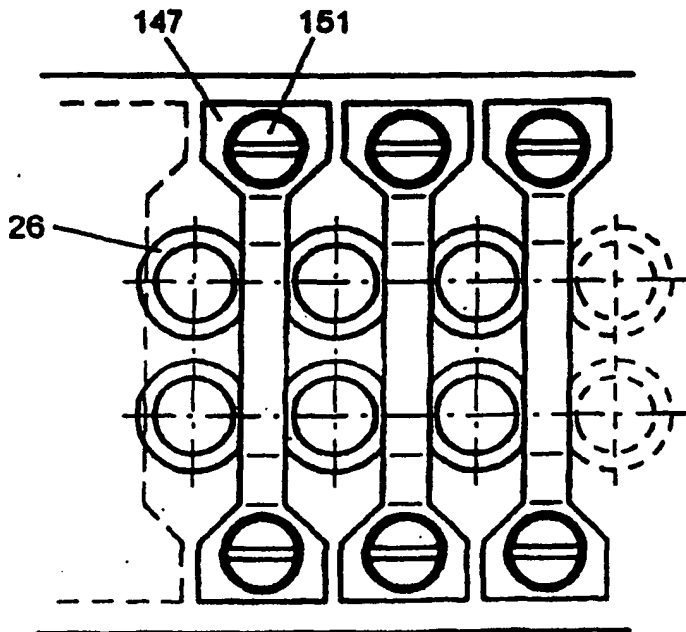


Fig. 8a

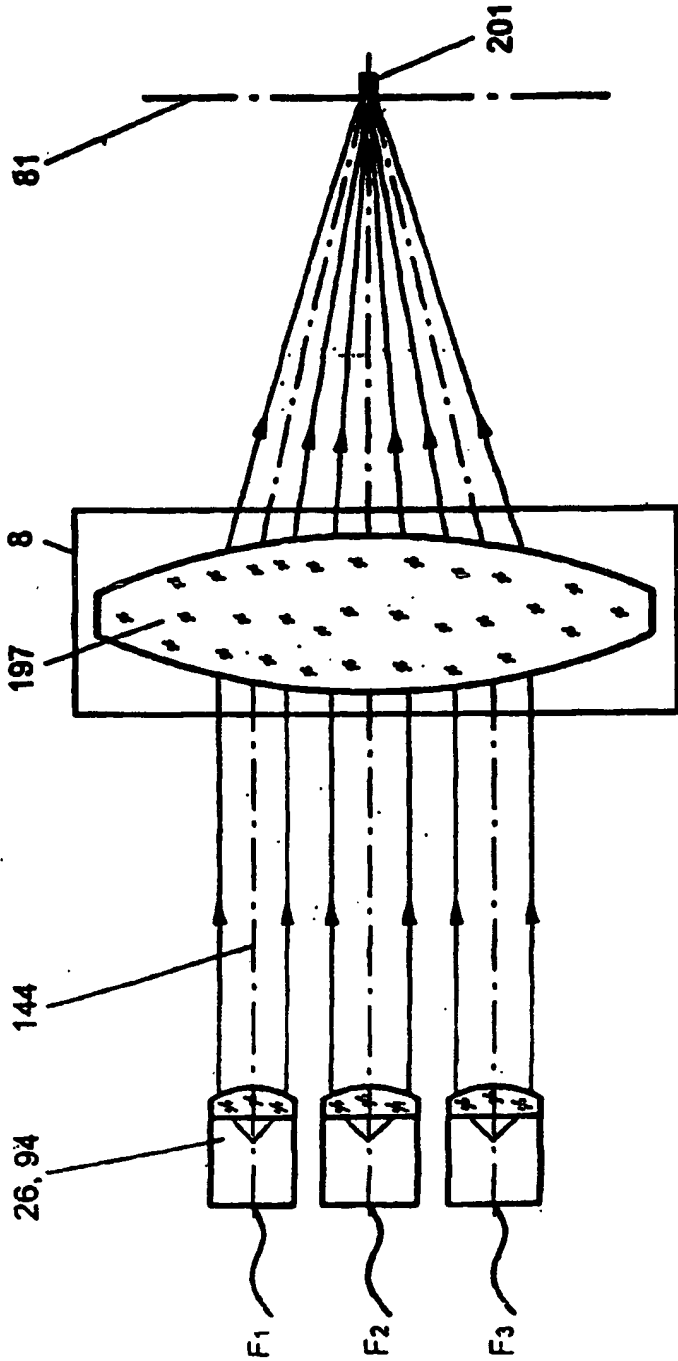


Fig. 31



Fig. 30

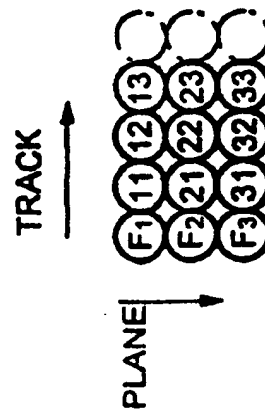


Fig. 29

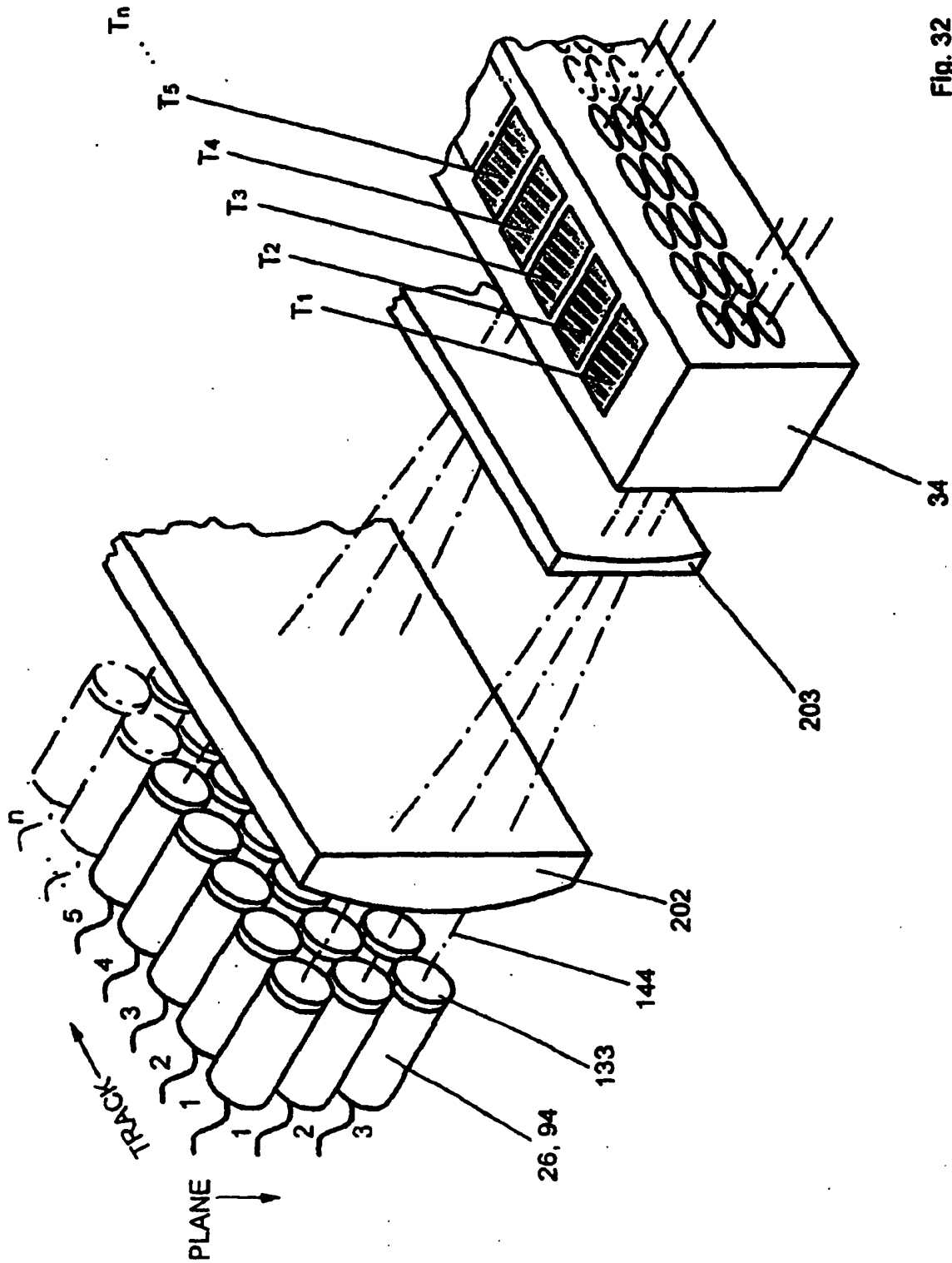
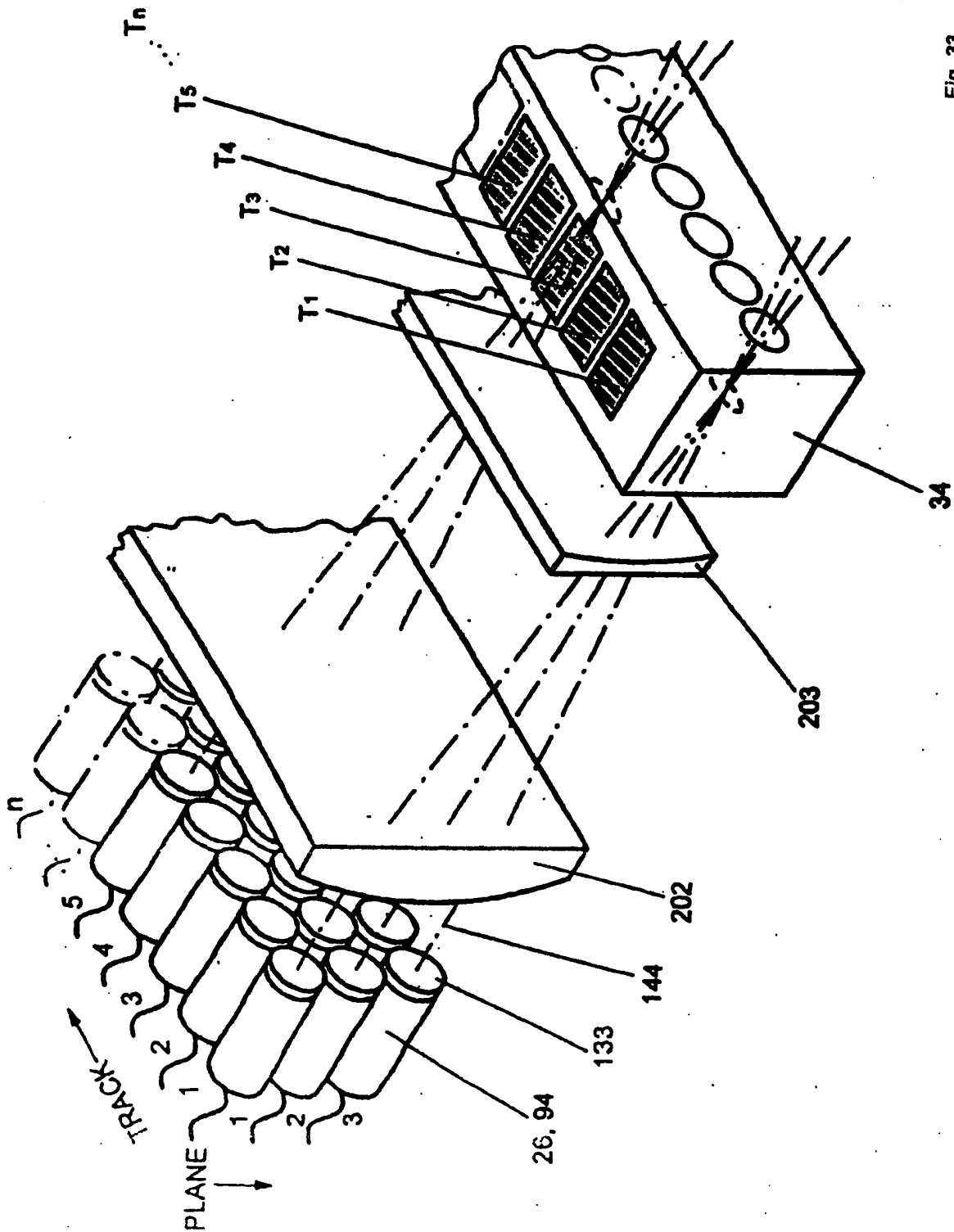


Fig. 32



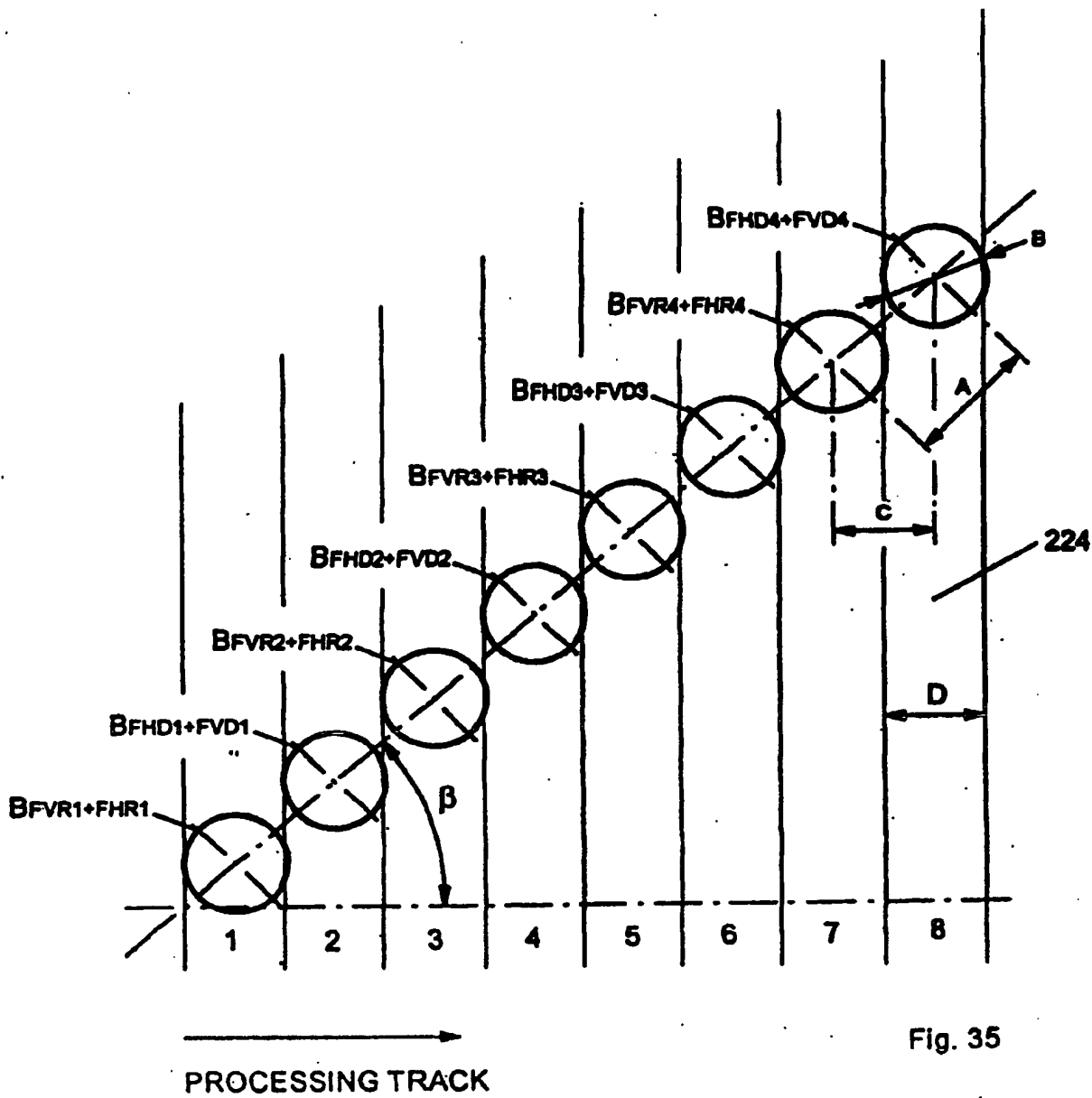


Fig. 35

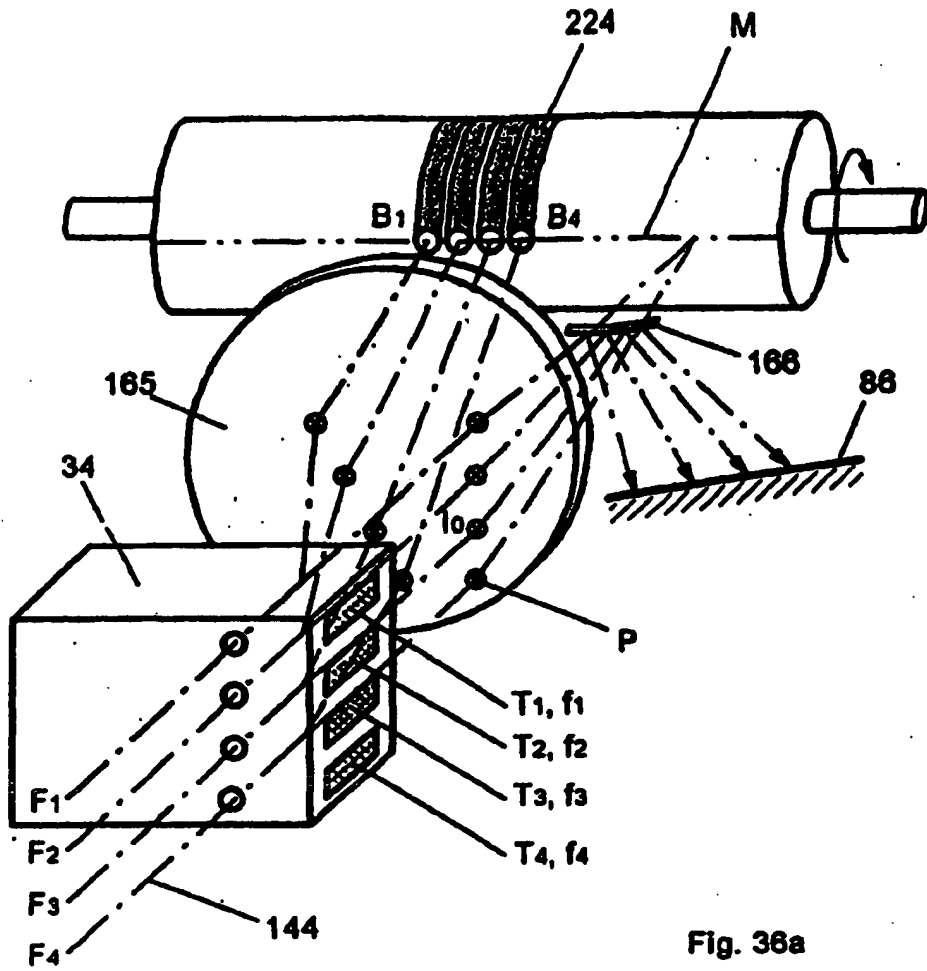


Fig. 36a

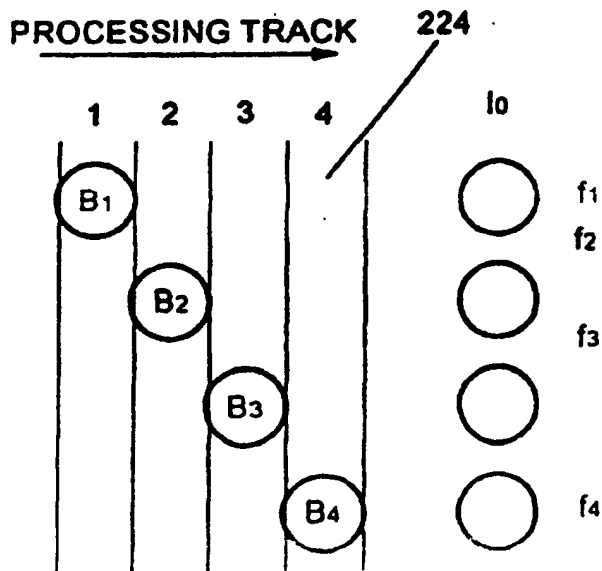


Fig. 36

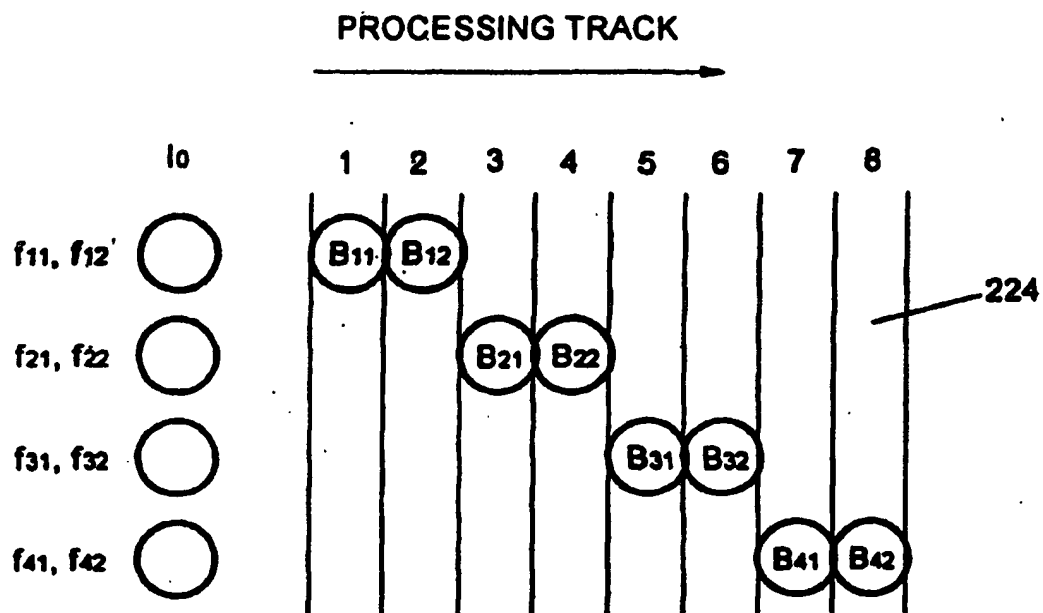


Fig. 37

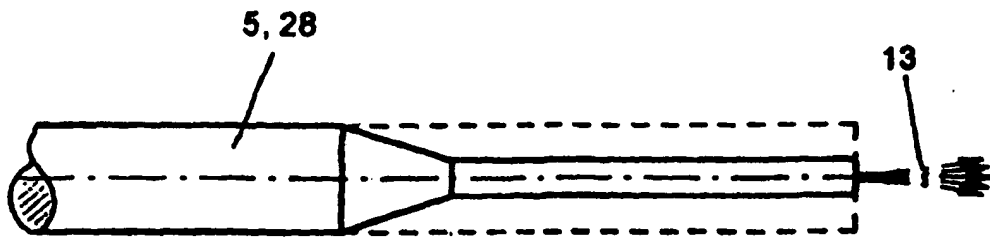


Fig. 40

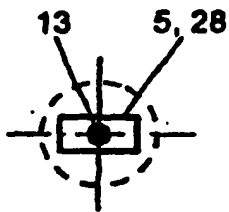


Fig. 40a

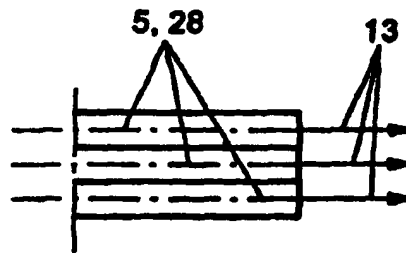


Fig. 40b

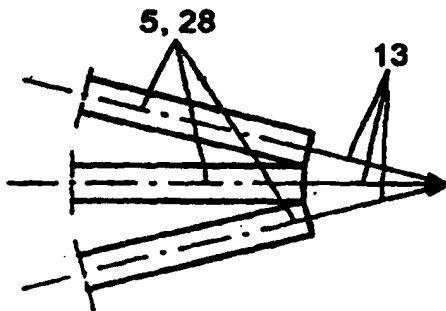


Fig. 40c

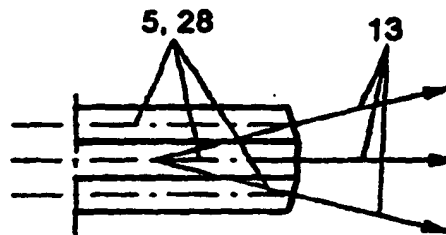


Fig. 40d

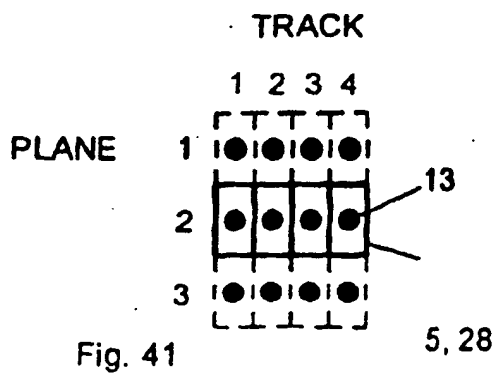


Fig. 41